

Claims

1           1. An electrical connector for coupling to an electrical cable having a center  
2 conductor and an outer insulation layer, comprising:

3               a housing having an axial bore therein for receiving an electrical cable;

4               an electrically conductive clamp in the bore of said housing at the inner periphery  
5 thereof, said electrically conductive clamp having a pointed end shaped and sized for driving  
6 into the outer insulated layer of an electrical cable; and

7               a cylindrical compression cap with a closed end apertured to receive an electrical  
8 cable in passage to said housing and a side wall sized at its outer periphery for engaging the  
9 inner periphery of said housing and shaped at the open end of said side wall for engaging the  
10 pointed end of said electrically conductive clamp to drive the pointed end thereof toward the  
11 axis of the bore in said housing thereby to mechanically connect an electrical cable to said  
12 housing.

1           2. An electrical connector for coupling to an electrical cable of the coaxial type  
2 having a center conductor enclosed in an inner insulation layer and a conductive sheath  
3 around the inner insulation layer and an outer insulation layer overlying the conductive  
4 sheath, comprising:

5               a housing having an axial bore therein for receiving a coaxial cable in one end  
6 thereof, said housing being electrically conductive;

7               an electrically conductive clamp in the bore of said housing and electrically  
8 connected to said housing at the inner periphery thereof, said electrically conductive clamp  
9 having a pointed end shaped and sized for driving into the outer insulated layer of the coaxial  
10 cable to engage the conductive sheath thereof, and

11              a cylindrical compression cap having a closed end apertured to receive a coaxial cable  
12 in passage to said electrically conductive housing and having a side wall sized at its outer  
13 periphery for engaging the inner periphery of said housing and shaped at the open end of the  
14 side wall for engaging the pointed end of said electrically conductive clamp to drive the

15 pointed end thereof toward the axis of the bore in said housing thereby to mechanically  
16 connect a coaxial cable to said housing and to electrically connect the conductive sheath of  
17 a coaxial cable to said housing through said conductive clamp.

1 3. The electrical connector of claim 2 wherein the pointed end of said conductive  
2 clamp is ramp shaped and the end of the side wall of said cylindrical compression cap is  
3 complimentarily ramp shaped so that upon mutual engagement longitudinally along the axis  
4 of the said housing, the pointed end of said conductive clamp is driven radially toward the  
5 axis of said housing.

1 4. The electrical connector of claim 3 wherein said housing includes a radially  
2 disposed electrically insulating wall terminating the bore therein and acting as a stop for a  
3 coaxial cable received in the bore.

1 5. The electrical connector of claim 4 wherein said insulating wall includes a center  
2 aperture for supporting an electrical conductor insulated from said electrically conductive  
3 housing.

1 6. The electrical connector of claim 5 wherein the center aperture of said insulating  
2 wall is adapted to receive and support the center conductor of a coaxial cable.

1 7. The electrical connector of claim 5 wherein the center aperture of said insulating  
2 wall is adapted to receive and support a conductive prong projecting into the bore of said  
3 housing for making electrical contact with the center conductor of a coaxial cable.

1 8. The electrical connector of claim 3 wherein the inner periphery of said housing  
2 and the outer periphery of said compression cap are threaded for longitudinal axial  
3 engagement.

1           9. The electrical connector of claim 3 wherein the inner periphery of said housing  
2 and the outer periphery of said compression cap engage in a longitudinal axial interference  
3 fit.

1           10. The electrical connector of claim 9 wherein the inner periphery of said housing  
2 and the outer periphery of said compression cap are cooperatively ridged and grooved to  
3 interlock in a longitudinal axial interference fit.

1           11. The electrical connector of claim 10 wherein compression cap is of deformable  
2 material and the side wall of said compression cap is slotted between the point of interlock  
3 and the closed end thereof to deform radially toward the axis of the bore and to clamp on to  
4 the outer insulation layer of a coaxial cable.

1           12. An electrical connector for coupling to an insulated electrical conductor,  
2 comprising:

3           a housing having a first end for receiving an end of an insulated electrical conductor;  
4           at least one clamping arm having a first end shaped for penetrating an outer insulation  
5 layer of the insulated electrical conductor; and

6           a cap for insertion into said first end of said housing after the end of the insulated  
7 electrical conductor is inserted into said first end of said housing,

8           wherein once said first end of said at least one clamping arm penetrates the outer  
9 insulation layer of the insulated electrical conductor and the end of the insulated electrical  
10 conductor is inserted into said first end of said housing, said cap can be inserted into said first  
11 end of said housing such that said at least one clamping arm is secured in place.

1           13. The electrical connector according to claim 12,  
2           the first end of said at least one clamping arm has a beveled edge,

3 wherein said first end of said at least one clamping arm is caused to penetrate the  
4 outer insulation layer by a tool which pushes on the beveled edge while the end of the  
5 insulated electrical conductor is inserted into said first end of the housing.

1 14. The electrical connector according to claim 12,  
2 wherein the first end of said at least one clamping arm has a beveled edge,  
3 wherein as said cap is inserted into the first end of said housing a beveled edge of  
4 said cap pushes the beveled edge of said at least one clamping arm such as to cause the first  
5 end of said at least one clamping arm to penetrate into the outer insulation layer of the  
6 insulated conductor.

1 15. An electrical connector for coupling to an insulated electrical conductor;  
2 comprising:  
3 a housing having a first end for receiving an end of an insulated electrical conductor;  
4 at least one clamping arm having a first end shaped for penetrating an outer insulation  
5 layer of the insulated electrical conductor;  
6 a cap for insertion into said first end of said housing after an end of the insulated  
7 electrical conductor is inserted into said first end of said housing,  
8 wherein said at least one clamping arm is positioned within said housing such that  
9 once the end of the insulated electrical conductor is inserted into said housing, the insertion  
10 of said cap into the first end of said housing causes said first end of said at least one  
11 clamping arm to penetrate the outer insulation layer of the insulated electrical conductor.

1 16. The electrical connector according to claim 15,  
2 wherein the insulated electrical conductor is of a coaxial cable type having a center  
3 conductor enclosed in an inner insulation layer and a conductive sheath around the inner  
4 insulation layer which is enclosed in an outer insulation layer,

5            wherein as said cap is inserted into the first end of said housing the cap causes said  
6            at least one clamping arm to penetrate through the outer insulation layer and to make  
7            electrical contact with the outer conductor of the insulated electrical conductor.

1            17. The electrical conductor according to claim 15,  
2            wherein the insulated electrical conductor is of a type having a single conductor and  
3            an outer insulation layer,

4            wherein as said cap is inserted into the first end of said housing the cap causes said  
5            at least one clamping arm to penetrate through the outer insulation layer and to make  
6            electrical contact with a single conductor of the insulated electrical conductor.

1            18. The electrical connector according to claim 16,  
2            wherein inserting said cap into the first end of said housing causes said at least one  
3            clamping arm to make electrical contact with said housing such that said housing is in  
4            electrical contact with the outer conductor of the insulated electrical conductor.

1            19. The electrical connector according to claim 16,  
2            wherein said at least one clamping arm is integral with the housing.

1            20. The electrical connector according to claim 16,  
2            wherein the first end of said at least one clamping arm has a beveled edge,  
3            wherein as said cap is inserted into the first end of said housing a beveled edge of  
4            said cap pushes the beveled edge of said at least one clamping arm such as to cause the first  
5            end of said at least one clamping arm to penetrate the outer insulation layer of the insulated  
6            electrical conductor.

1            21. The electrical connector according to claim 16,  
2            wherein the first end of said at least one clamping arm has a beveled edge,

3            wherein as the cap is inserted into the first end of said housing, the cap pushes said  
4            at least one clamping arm such that the beveled edge of said at least one clamping arm  
5            interacts with a beveled edge on the housing such as to cause the first end of said at least one  
6            clamping arm to penetrate the outer insulation layer and make electrical contact with the  
7            outer conductor of the insulated electrical conductor.

1            22. The electrical connector according to claim 16, wherein the cap threadably  
2            engages the first end of housing, such that the insertion of the cap is caused by threading the  
3            cap with respect to the first end of the housing.

1            23. The electrical connector according to claim 16, further comprising:  
2            a beveled ring; and  
3            a compression ring,  
4            wherein inserting the cap into the first end of the housing causes the cap to push the  
5            compression ring such that the compression ring contacts and pushes a first beveled edge of  
6            the beveled ring such that a second beveled edge of the beveled ring engages said at least one  
7            clamping arm causing the first end of said at least one clamping arm to penetrate the outer  
8            insulation layer and make electrical contact with the outer conductor of the insulated  
9            electrical conductor.

1            24. The electrical connector according to claim 23, wherein the housing has a groove  
2            adapted to receive a discrete protrusion on the beveled ring, wherein the discrete protrusion  
3            is guided by the groove as the beveled ring is pushed by the compression ring, and wherein  
4            the discrete protrusion and groove prevent the beveled ring from rotating with respect to the  
5            housing.

1            25. The electrical connector according to claim 16,

2 wherein said housing is adapted to receive the end of the insulated electrical  
3 conductor which has a portion of the inner insulation layer and center conductor protruding  
4 from an otherwise flush end of the insulated electrical conductor,

5 wherein the portion of the center conductor protrudes from the protruding portion of  
6 the inner insulation layer such that the protruding portion of the inner insulation layer acts  
7 to electrically insulate the center conductor from the housing and the protruding center  
8 conductor protrudes into a second end of the connector.

1 26. The electrical connector according to claim 16, further comprising:

2 an insulation section attached to the housing,

3 wherein the insulation section has an aperture for receiving a protruding center  
4 conductor of the insulated electrical conductor, where said housing and insulation section is  
5 adapted to receive the end of the insulated electrical conductor which has a portion of the  
6 center conductor protruding from an otherwise flush end of the insulated electrical conductor  
7 such that the protruding center conductor passes through the aperture in the insulation section  
8 and protrudes into a second end of the connector, and where the insulation section  
9 electrically insulates the center conductor from the housing.

1 27. The electrical connector according to claim 16, further comprising:

2 an insulation section having an aperture therethrough, and an electrically conductive  
3 pin located in the aperture of the insulation section such that the pin protrudes into the first  
4 end of the connector and protrudes into a second end of the connector,

5 wherein the center conductor of the insulated electrical conductor makes electrical  
6 contact with the pin protruding into the first end of the connector as the end of the insulated  
7 electrical conductor is inserted into the first end of the connector.

1 28. The electrical connector according to claim 27,

2 wherein the pin has a hollow portion protruding into the first end of the connector for  
3 receiving a solid center conductor.

1           29. The electrical connector according to claim 28, wherein the hollow portion of the  
2 pin has at least one slit allowing the hollow portion to expand as a solid center conductor  
3 enters the hollow portion.

1           30. The electrical connector according to claim 27,  
2 wherein the pin has a solid portion protruding into the first end of the connector for  
3 contacting the center conductor of the insulated electrical conductor.

1           31. The electrical connector according to claim 16,  
2 wherein the cap comprises at least one protrusion which provides strain relief when  
3 the cap is inserted into the first end of the connector while the end of the insulated electrical  
4 connector is inserted in the first end of the connector.

1           32. The electrical connector according to claim 31,  
2 wherein the cap comprises at least one slot which allows the cap to compress when  
3 inserting the cap into the first end of the housing.